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<p>The purpose of this project was to examine the influence of parenteral administration of interleukin-1, a cytokine with diverse biological activities, on antibacterial resistance in a laboratory rodent model. We first documented that intraperitoneal injection of minute quantities (0.1-1.0 ng per mouse) of interleukin-1 resulted in a rapid influx of inflammatory neutrophils. Neutrophil accumulation did not result from contamination of the interleukin-1 with bacterial lipopolysaccharide, nor was it abrogated by treatment with indomethacin, an inhibitor of prostaglandin synthesis. We also observed a small but significant increase in the number of inflammatory macrophages at later timepoints. We went on to show that prophylactic or concomitant administration of interleukin-1 (0.17 ug per mouse) significantly enhanced the resistance of recipient mice to a challenge infection with the facultative intracellular pathogen <i>Listeria monocytogenes</i>. Protection was not caused by contaminating bacterial lipopolysaccharide. Interleukin-1 mediated protection was associated with a rapid burst of serum colony--stimulating activity.</p>			
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Current experiments are comparing the separate and combined effects of interleukin-1 and other cytokines on antibacterial resistance. We also will examine the influence of an in vivo and in vitro administration of interleukin-1 on leukocyte function. These observations suggest that pretreatment with interleukin-1 might be beneficial for those at increased risk of bacterial infection. This work has resulted in the following publications:

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CZUPRYNSKI, C.J. and J.F. Brown. 1987. Recombinant murine interleukin-1 α enhancement of nonspecific antibacterial resistance. Infection and Immunity: 55:2061-2065.

CZUPRYNSKI, C.J. and J.F. Brown. 1987. Purified human and recombinant murine interleukin-1 α induced accumulation of inflammatory neutrophils and mononuclear phagocytes: possible association with enhanced antibacterial resistance. Microbial Pathogenesis: in press (M87-36).

CZUPRYNSKI, C.J., J.F. Brown, K.M. Young, A.J. Cooley, and R.S. Kurtz. 1988. Effects of murine recombinant interleukin-1 α on the host response to bacterial infection. Journal of Immunology: in press.

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